High precision transducers gauge bonding adhesives

ZEMIC provides high quality strain gauge bonding adhesives for transducers manufacturing. At present ZEMIC provide two common gauge bonding adhesives for this application which are H–610 and H–600 respectively. Following is a description of several bonding adhesives and some protective coatings.

Application of the H-610 adhesive

Characteristics and application

H–610 is a high performance two component adhesive which is characterised by its low hysteresis, small creep, good repeatability, low viscosity, and a wide working temperature. The adhesive is mainly used for long term gauge bonding.

The operating temperature for this adhesive is:

– For long term: –269℃ up to +250℃
– For short term: –269℃ up to +300℃

H–610 is suitable for all strain gauges and compensation resistors. It is highly recommended for high precision transducer sensors for temperatures up to 250℃ . It is also suitable for TJ series underwater strain gauges and TA series strain gauges for great precision stress analysis.

Storage

ZEMIC H–610 adhesive is composed of 2 components, A and B. Make sure that, before usage, the components are taken out of the refrigerator and are given 1 to 2 hours to get to room temperature. The next step is to mix components A and B in a A:B = 1:2 ratio. To mix the components use a glass rod, screw the cap back on the mixture and sway the bottle for 2 to 5 minutes and then set the mixture aside for 1 hour. When the mixture has turned into a light yellow or yellowish orange liquid it is ready to use.

The H–610 adhesive has a storage life of 6 months under a temperature of 24℃ and a 12 months storage life when kept in 2℃ to 6℃ . Please note not to freeze the adhesive. After mixing, the adhesive can be kept for 7–10 days at room temperature and 1 month when kept in 2℃ to 6℃ .

Method of application

1. The surface where the gauge will be attached should be sand–blasted or polished and cleaned well with acetone and butanone.
2. Use anhydrous ethyl alcohol to clean the tools, Teflon film and the strain gauge which will be bonded.
3. Coat the area where the strain gauge is going to be attached with H–610 adhesive and let it dry for 2 to 5 minutes. When temperature is lower than room temperature, this should take less time. When the temperature is very low, this step can be skipped.
4. Bond the gauge in the right position, cover it with Teflon film and squeeze out the bubbles or spare adhesive from under the gauge. This is done in the axial direction of the gauge.
5. Cover the Teflon film with a rubber and a metal plate as soon as possible and apply a pressure of 0.1– 0.3 MPa and put the element with the gauge pressured on it in the oven.
6. Heat up the oven to 135 ℃ at a speed of 2 ℃ /minute. Keep the gauge in the oven for two hours. After cooling the element and gauges to room temperature take off the clamp, metal plate, rubber and Teflon film. After this, put the element with gauge back in the oven and heat it up to 165℃ at a speed of 2℃ / minute. Now keep the element at this temperature for two hours. After this cool the element back down to

Bonding adhesive

room temperature.

7. The H–610 adhesive is now suitable to be used in an environment in which the humidity is less than 65%.

Caution

1. Make sure to take the H–610 adhesive out of the refrigerator 2 hours prior to using it and try using it only when the liquids temperature is the same as the environmental temperature
2. When mixing the components, make sure to mix all of the component B with all of the component A. When this is not done, it will cause a disproportional mixture and this could influence the adherent force of the adhesive. In addition make sure the two components are mixed well so a homogenous adherent force will occur.
3. During usage, the adhesives bottle should be as far away from heat and light sources. This is due to the adhesive solvent reacting with higher temperature and light to volatize faster.
4. When done using the adhesive it is advised to screw the bottle cap on as soon as possible. This way volatizing of the solvent and the curing agent separating out will be avoided. When this is not done, the separating of the curing agent might cause very fine particles to arise in the adhesive which will affect the adhesive for next use.
5. Clean the tools used after bonding the gauges. This way contamination and impurities by external factors can be avoided at next use.
6. When a bottle of adhesive is used up and the adhesive becomes thicker or little particles arise in the adhesive (caused by dust). The adhesive is not suitable for use of strain gauge bonding anymore. However, it is still fine to use for compensation resistors or terminal tab bonding.